

Conceptual Change as it Relates to Motivation to Engage in Regular Physical Exercise

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Abstract

Most models of human balance and wellness contain similar essential dimensions such as social, emotional, spiritual, environmental, occupational, intellectual, and physical. The physical domain acknowledges the individual's need to engage in physical activity and make healthful choices with regard to what the body is exposed to. It is in this physical domain that most Americans are generally operating at a deficit. Research documenting the benefits of engaging in regular physical exercise aligns with many of the elements included in wellness models: physical, psychological, quality of life, as well as social and financial concerns of the extended community. Despite this understanding, the vast majority of the population does not engage in routine exercise despite conveying an intention to do so. This disparity between thinking and behaving should signal those in the behavioral health field there is an unmet need. Psychologists and related skilled helpers can use this information to better address their patient's needs and overall health goals. Whether the goal is to promote behaviors that decrease disease or alternatively increase wellness, physical exercise accomplishes both simultaneously. Mental health professionals should feel confident prescribing a health regimen for their patients that includes regular physical exercise, and bridges the gap between intention and action. Understanding the patient's specific barriers, promoting conceptual change, and addressing motivational issues are complex tasks. The information shared in this paper is a starting place for unraveling this complexity, laying the foundation for conceptual framework, and inspiring mental health professionals to make progress both personally and professionally in the domain of physical exercise.

Research on the topic of participation in regular physical exercise has been abundant, the health benefits are clearly documented, numerous safe and effective exercise modalities have been identified, and various populations have been described in terms of their level of engagement in regular physical exercise. The World Health Organization (2002) reports that sedentary lifestyle is one of the ten leading causes of death and disability, and lack of physical exercise leads to more than two million deaths per year.

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The Healthy People 2010 objectives recommends 30 minutes of moderate activity, five days per week, or 20 minutes of vigorous activity, three days per week (USDHHS, 2005). The importance of this topic cannot be overstated, and yet approximately 15% of the U.S. population actually engages in physical exercise on a regular basis (U.S. days per week, or 20 minutes of vigorous activity, three days per week (USDHHS, 2005). Department of Health and Human Resources, 1998). Weinberg & Gould (2007) have compiled statistics from a number of studies that confirm inactivity rates in the United States and indicate that: 1) only 10 - 25% of American adults are active enough to maintain or increase cardiorespiratory and muscular fitness; 2) only 10 - 15% of adults participate in vigorous exercise regularly (three times a week for at least 20 minutes); 3) 30% of adults do not participate in any physical activity; 4) 50% of youths from 12 to 21 years of age do not participate in regular activity; and 5) physical activity declines steadily through adolescence from about 70% at age 12 to 30% by age 21. Given the ample research indicating the numerous benefits of routine physical activity and the lack of consistent engagement in exercise, the salient question is: "What is the relationship between conceptual change about physical exercise and one's motivation to engage in regular physical exercise for overall wellness?" The purpose of this paper is to discuss the importance of this topic and gain understanding of the relationship between conceptual change about physical exercise and one's motivation to engage in regular physical exercise for overall wellness.

Physical Health Benefits of Regular Physical Exercise

There are numerous physical health benefits of regular exercise ranging from disease prevention, symptom reduction, to amelioration of some diseases. The quantity of exercise that produces the optimal health effect varies from situation to situation; however, the general prescription seems to align with the recommendation for adults from the American College of Sports Medicine (ACSM) and the American Heart Association (AHA): moderate-intensity activity (i.e., noticeable acceleration in heart rate such as a brisk walk) for 150 minutes per week, or greater than thirty minutes a day, five days each week; vigorous-intensity activity (i.e., causing rapid breathing and substantial increase in heart rate such as jogging) for at least twenty minutes a day, three days

each week; 8-10 endurance exercises 2-3 times per week; flexibility exercise 2-3 days a week; and neuromotor exercise (i.e., functional fitness training) 2-3 days a week (ACSM, 2011; Haskell et al., 2007). Prospective observational studies indicate an inverse relationship between disease outcomes and regular physical activity which include thromboembolic stroke, type 2 diabetes mellitus—exercise may improve insulin function by increasing the muscle's demand for glucose and resulting in a drop of nearly 60% for insulin resistance—obesity, breast cancer, cardiovascular disease, hypertension, osteoporosis, colon cancer, blood triglycerides, cholesterol & LDL cholesterol, lung and multiple myeloma cancers, prostate cancer, improved mortality rates, musculoskeletal health and sarcopenia, arthritis, maintenance of normal strength, peak bone mass, and joint structure (Haskell et al., 2007; Kravitz, 2007; Rethorst et al., 2009).

Psychological Benefits of Regular Physical Exercise

Often, when health benefits of physical exercise are discussed the focus gravitates to physical health; however, research is uncovering a wide variety of psychological benefits that are of significant value. Routine physical exercise has the capacity to improve mental health functioning, reduce the symptoms of psychological diagnoses, reverse mental health diagnoses, and even promote neurogenesis (i.e., production of new neurons).

Once again, the type and quantity of physical exercise will vary slightly from situation to situation, but generally conforms to the recommendation for adults from the American College of Sports Medicine and the American Heart Association mentioned previously (Haskell et al., 2007). Referencing research from the ACSM/AHA (2007), there is an inverse relationship between disease outcomes and regular physical activity and disease which includes anxiety (Wipfli, Rethorst, & Landers, 2008), depression (Archer, 2008; Carlson, 2013), mood states, stress, cognitive function, vitality, satisfaction with life, and chronic stress (Haskell et al., 2007; Kravitz, 2007; Wilson et al., 2008). A meta-analysis of randomized trials performed by Rethorst et al. (2009) determined that treating depression with routine exercise was just as effective as psychotherapy and antidepressant medications (without the potential side-effects such

as high monetary costs, mania, sleep disturbances, lethargy, weight loss, sexual dysfunction, bleeding, seizures, and suicidal ideations), significantly lowered depression scores, with nine out of the sixteen exercise treatment groups classified as 'recovered' at post-treatment, and another three classified as improved (Rethorst et al., 2009). As a result of this meta-analysis Rethorst et al. (2009) were able to provide exercise as a treatment of depression with a level 1, Grade A evidence rating. Physical exercise as adjunctive treatment for schizophrenia, somatoform disorders, and substance abuse has demonstrated positive results as well (Tkachuk & Martin, 1999). Research on the effects of regular physical exercise on the brain suggests that increased blood flow to the brain due to physical exercise is associated with neurogenesis (Carlson, 2013). Current research clearly supports the assertion that regular physical exercise has the capacity to positively impact psychological functioning.

Effects on Quality of Life Resulting From Regular Physical Exercise

Given the research data that supports the use of regular physical exercise for increased physical and psychological wellness it is logical that quality of life also has the potential for improvement. Self-esteem, self-efficacy, self-worth, and affective mood are all influenced by regular physical exercise and are indicators of quality of life. These constructs will be defined in the following section, and applicable research will be offered in support of the notion that regular physical exercise has a positive impact on quality of life.

Self-esteem has been described by Rosenberg (1965) as "...favorable or unfavorable attitude toward oneself...important for a successful and satisfying life and is a central aspect of psychological well-being" (p. 15). According to McAuley et al. (2005), physical self-esteem can be understood as being correlated with physical condition and an attractive body, and strength with correlation coefficients of .40, .33, and .24 respectively. Multiple research studies have concluded that regular physical exercise has a positive influence on self-esteem, and therefore quality of life (Kravitz, 2007; Moore, Mitchell, Bibeau & Bartholomew, 2011; Rethorst et al., 2009; Wilson, 2008).

Self-efficacy is a domain specific construct and is focused on a particular task, skill, or situation. It can be explained in terms of a person's confidence in their ability to

carry out the behaviors required to realize a desired outcome (Bandura, 1986). McAuley et al. (2005) found a statistically significant correlation between physical activity and self-efficacy. Conversely, self-efficacy has been found to be a robust predictor of health behavior, including physical activity (Bandura, 1986). Self-efficacy has been determined through various studies to both play an important role in encouraging exercise behaviors, as well as being positively affected by participation in physical exercise, both of which contributes to increased quality of life (Duncan et al., 2011; McAuley et al., 2005).

Self-worth is considered to be the way in which one regards the self, including personal judgments of worthiness, self-acceptance, and a sense of competence (Huberty, 2012). When one feels an elevated sense of self-worth, quality of life is positively influenced. In a study by Huberty et al. (2012) self-worth was found to be significantly correlated with regular physical activity. In this study, female participants that self-reported engaging in regular physical activity had higher physical activity knowledge (knowledge about physical activity and its relationship to physical activity that may provide the individual with a sense of empowerment to be successful in physical activity), social knowledge (greater levels of support from loved ones, exercise instructors and other exercise participants increased the likelihood that one would engage in more physical activity), emotional knowledge (understanding the importance of taking care of oneself and quality of life through participation in physical activity and that this may reflect favorably onto others in their lives), and general self-worth (includes physical condition, attractive body, and strength) than those reporting only some or no physical activity. Therefore, regular physical exercise can be viewed as being positively associated with several domains of self-worth and therefore increased quality of life.

Effect Of Regular Physical Exercise At The Macro Level

So far the discussion of regular physical exercise has focused on the individual; however, each individual has a corresponding impact on those in their family, community, and society. As previously mentioned in this paper, physical inactivity can be associated with numerous physical health problems including coronary heart disease, certain types of cancer, diabetes, stroke, as well as other serious conditions.

These preventable diseases have a significant impact on lost work time, medical expenses, premature death, and disability which are estimated to exceed a cost of \$70 billion a year (Macera, 2009). In addition, obesity and inactivity accounted for 9.4% of the health care expenditures in the U.S. in 1995 (Macera, 2009). Also, more than a third of high school students do not engage in regular, vigorous, physical activity. Research by Macera (2009) states that from 1991-1999 student enrollment in physical education classes reduced from 41.6% to 32.2%. Health behavior choices, especially poor ones, can have an impact on family and friends when sickness and disease keep them from engaging in meaningful and mutually beneficial relationships. It can be concluded that the effects of engaging in regular physical activity extends well beyond the individual, and attention to the wide-spread problem of inactivity is truly a societal concern.

The Gap Between Exercise Intention and Execution

The growing body of evidence that validates the overall benefits of physical exercise has created an awareness and movement toward implementation of regular physical exercise. The ACSM and AHA (2007) report that less than half the U.S. adult population meets the recommendation for physical activity (Haskell et al., 2007). Gibbison & Johnson's (2011) research asserts that of the 1,513 individuals in their research sample 27% did not currently intend to make changes in their level of physical activity, 24% were considering change, 21% were making small changes, 9% were actively engaging in new physical activity behaviors, and only 19% were actually maintaining a physically active lifestyle. Of this sample, 54% of participants who reported they would like to be engaged in regular physical activities; that is, there seems to be a growing understanding for the importance of regular physical exercise. Despite this interest, only 19% of the research participants actually established physical activity as an enduring behavioral change. In addition, data gathered by the Center for Disease Control and Prevention (2010) indicates that 25% of adults are not active at all. There is an apparent disconnect between desire to engage in regular physical exercise and its execution by these well-intentioned individuals.

Consideration should be given to the individual's conceptualization of physical exercise as a goal. When the goal of engaging in routine physical exercise becomes

challenging, problem solving must occur if the goal is to be attained. Problem solving is a higher order cognitive process that can be broken down into four parts: formation of the problem representation, creation of a plan, implementation of the plan, and monitoring of this process and end product (J. McClure, NAU Foundations of Learning lecture, April 10, 2013). Errors during the formation of the problem representation are common due to inadequate declarative knowledge, improper schema (i.e., conceptual framework) activation, or poor interpretation of the problem (Voss, 1986). If an individual is an exercise novice, understanding why they are unsuccessful at initiating or sustaining an exercise program may overtax their working memory making it unlikely to resolve. In addition, the aspiring exerciser may not have previous experience to relate to this problem situation successfully. Therefore, the problem representation relating to beginning and sustaining an exercise regimen must be clearly defined for the goal to be realized.

The next phase of problem solving requires the creation of a plan. In terms of understanding how to become engaged successfully in a regular exercise regimen there are a number of common pitfalls that novice exercisers may make since this will be their first time attempting to construct a new plan. The novice may make errors such as planning an exercise routine that is over-ambitious (e.g., working out too long and too frequently in the initial stage) (Peetz, 2011), past behavior (i.e., failed attempts) and self-defeating cognitions (Godin, Sheeran, Conner, Belanger-Gravel, Gallani & Nolin, 2010), as well as not eliciting adequate support (Gibbison & Johnson, 2011).

As the plan is implemented the novice exerciser may lack adequate procedural knowledge, automatization of physical and mental actions, in order to implement the plan successfully. Inadequate procedural knowledge may take the form of poor nutrition habits to support energy expenditure, poor body mechanics during the motions of exercise that compromise safety and may lead to injury, or patterns of thinking that undermine the enjoyment of physical exercise (Ruby, Dunn, Perrino, Gillis & Viel, 2011). Inadequate or faulty procedural knowledge may be an inhibitory factor in the implementation of the plan to engage in regular physical activity.

Finally, a novice exerciser may not have developed proper monitoring skills or emotional intelligence (Ilyasi, Sedagati & Salehian, 2011) to evaluate and adjust the plan as needed. When an individual is new to a physical exercise routine and misses an exercise session, when social supports fail, when a strain or injury occurs, or when they just feel discouraged, the response may be to give up or decide regular exercise is not possible. There are many barriers an individual will experience in the process to becoming a regular exerciser and it is vital to be able to assess, re-evaluate, and adjust as these barriers present themselves. With these ideas in mind, it becomes clear that the problem solving process applied to establishing regular physical exercise can be challenging due to deficiencies at any of the problem solving phases.

The reader has been presented with information pertaining to the effects of regular physical exercise on physical and psychological health, effects on quality of life, impact on a macro-level, and the gap between contemplation of engaging in regular physical exercise and actual engagement in routine exercise have been presented. This introduction to the importance of regular physical exercise as it relates to overall wellness will be useful in the following discussion of the relationship between conceptual change toward physical exercise and motivation to engage in physical exercise for overall wellness.

Conceptual Change About Physical Exercise

Conceptual change about physical exercise will be discussed in terms of cognitive dissonance, development and learning, and information processing theory. These theories provide a framework with which an understanding of this higher order cognitive process is possible. First, it is important to understand that conceptual change is a learning process that transforms an existing conception, idea, belief, or way of thinking (Davis, 2001). There are a number of theorists that have made attempts at explaining the phenomenon of conceptual change. This section will explore these theories, present their strengths and weaknesses, and apply them to the topic of conceptual change about physical exercise and motivation to engage in regular physical exercise for overall wellness.

Cognitive Dissonance

One conceptual change model proposed by Festinger (1957) is known as cognitive dissonance and can be understood as inconsistency between cognitions that produce unpleasant feelings and motivate one to reduce these contradictions. Individuals are compelled to bring their mental processes into alignment to reduce discomfort and restore balance. Cognitive dissonance can be used to create discrepancy between an individual's attitudes and observed behaviors to elicit motivation for change (Festinger, 1957; Stellerfson, Want & Klein, 2006). Cognitive dissonance theory has strong research support, is applicable in many situations in which conceptual change is desired, and it makes predictions about human thought and behavior as well as whether individuals will seek information. This theory does not take into account the variation between individual tolerance level for more or less dissonance, the fact that individuals may choose to relieve dissonance in less preferable ways, nor for persuasive arguments that invoke greater or lesser degrees of dissonance. Researchers at the Mayo Clinic have identified some common cognitions that are not conducive to engagement in regular physical exercise: 1) "I don't have enough time to exercise." 2) "Exercise is boring." 3) "I am self-conscious about how I look." 4) "I am too tired to exercise after work." 5) "I am too lazy." 6) "I am not athletic." 7) "I might hurt myself." 8) "I have tried to exercise in the past and failed." 9) "I can't afford health club fees." and 10) "My family doesn't support my efforts." (Mayo Clinic staff, 2011). Applying techniques that create cognitive dissonance has the effect of highlighting inconsistencies within the individual's thought processes; it encourages the individual to examine the difference between what they say they want and what they actually do; discomfort is created by the recognition of the discrepancy; and this process promotes a desire to reconcile the discrepancy in an effort to relieve the discomfort it produced. An example of creating cognitive dissonance could be, "You say that you do not have enough time to exercise yet one of your other concerns is that you are spending too much of your time engaged in 'screen-time' (i.e., T.V., computer, smartphone)." In this example a connection is made between thinking there is a lack of time to engage in exercise and the reality that there are other time periods that have

been poorly allocated for watching television, checking Facebook, or playing computer games. Creating cognitive dissonance can lead to cognitive change, and can be the first step in behavioral modification.

Nussbaum and Novick (1982) formulated a very similar model of conceptual change which focused on accomplishing cognitive accommodation through 'exposing' (i.e., revealing the individual's preconceptions), and 'discrepant' events (i.e., creating conceptual conflict within those preconceptions in addition to encouraging and guiding conceptual restructuring). These researchers contend that existing conceptual frameworks or schemas are often persistent and interfere with new information. Learners must therefore be made aware of how the preconceptions affect accurate accommodation of new material in an effort to prevent assimilation of existing and new information when inappropriate (Nussbaum & Novick, 1982). The concepts that Nussbaum and Novick present are in alignment with the idea that knowledge transfer must occur for learning to take place. Transfer is a type of learning where knowledge acquired in one situation influences performance in another one and can either aid (i.e., near transfer) or inhibit (i.e., negative transfer) the learning process. With consideration for the process of conceptual change as it relates to engaging in regular physical exercise it is prudent to account for previous knowledge or schema and how it may affect current learning or the transformation of such ideas.

Development and learning

The persistence of existing conceptual frameworks (i.e., pre-existing knowledge) is an important element of conceptual change to consider when attempting to change any pattern of thinking, feeling or behaving. Piaget (1978) explained cognitive development in terms of assimilation (i.e., addition of new information to existing scheme), accommodation (i.e., altering existing schemata in relation to new information), and organization (i.e., schema integration) that were determined by maturation and experience. The strengths of Piaget's theory include the great contribution his work has made on our understanding of developmental psychology and the resulting research it has inspired. Weaknesses of Piaget's theory of cognitive development include the observation that stages are not distinct, not always attained,

and lack socio-cultural perspective. When applied to conceptual change for regular physical activity it is important to keep in mind that challenges associated with inadequate assimilation, accommodation, and organization can occur.

Psychotherapeutic interventions that identify and correct any maladaptive cognitions would increase the likelihood of more healthy views of engaging in regular physical exercise.

Guidance During Learning

Conceptual change is also affected by the guidance one receives during the learning process. Vygotsky (1978) proposed the zone of proximal development (i.e., space between what one can and cannot do on their own) in which one learns through the act of guidance in areas where the learner is not capable of problem solving on their own due to lack of maturity in a particular domain. Zone of proximal development is often referred to as 'scaffolding' in contemporary education and is considered appropriate support for the individual in their zone of proximal development that can be gradually removed as one moves into competency. Scaffolding is a technique that can assist individuals in their pursuit of making physical exercise a regular occurrence. Guidance may come in the form of psychoeducation, coaching, support groups, and psychotherapy that focuses on problem solving and cognitive change. Strengths of Vygotsky's theory include its ability to identify the relationship between learning and development, and it also considers the socio-cultural contexts of the individual both within and between individuals within the same and different cultures. Weaknesses of this theory include a lack of accounting for the depth and reasons for the zone of proximal development (e.g. motivation, ability, comparison between individuals at the same age), the zone is not measurable, and lack of knowledge regarding the stability and generality of the zone. When this theory is applied to conceptual change as it relates to the adoption of regular physical exercise it is evident that the use of coaches, psychoeducational interventions, support groups, and problem solving assistance could be beneficial in making lasting cognitive changes.

Motivation to Engage in Regular Physical Exercise For Overall Wellness

The focus of the current section will now shift toward motivation to engage in regular physical exercise for overall wellness. Achievement motivation has been defined by Hareli & Weiner (2002) as, "...the prediction of the outcome, intensity, and persistence of achievement related strivings by an individual." (p. 183), and by Elliot (1999) as, "...the energization and direction of competence-based affect, cognition, and behavior." (p. 169). Motivation is a psychological process that leads to behavior, and is characterized by reflective strength (i.e., which psychological process incurs sufficient strength to surpass competing processes), duration (i.e., the length of time the psychological process endures), and direction (i.e., the expectation of what the individual will achieve). It is also beneficial to account for one's capacity, willingness, and opportunity when considering motivation to perform. Motivation to participate in regular physical exercise can often times seem an elusive ingredient in the successful adoption and implementation of a physical exercise plan—many researchers have attempted to unravel this mystery—and as a result there are several theories of motivation to discuss. Curiosity and a desire to explain motivation extends back as early as Socrates, Plato, and Aristotle, and this search for understanding has continued to more theorists including Edward Thorndike, B. F. Skinner, Clark Hull, Abraham Maslow, Herzberg, and David McClelland to name a few. Theories of motivation have a well-established history, yet the work in this field is far from complete and more contemporary motivational theories have converged to arrive at embodying motivation pragmatically and include: Eccles' expectancy-value model of motivation (1977), and Weiner's attribution theory (1985). These two theories will be described next.

Expectancy-Value Model

The origins of expectancy-value model of motivation were conceived by John Atkinson (1964), Bernard Weiner (1974), and later by Jacquelynne Eccles (1977). Eccles proposed that expectancies (comprised of self-concept of ability, perception of task difficulty, others' expectations, causal attributions, and locus of control) and values placed on a task determine an individual's behavior (Eccles, 1977). Within this model, motivation to engage in regular physical activity can be explained by examining salient

elements of expectancy and value. Expectancy is influenced by interpretation of events and task specific beliefs (i.e., sex-role identity and personal values, and costs of success or failure). Culture and community indicate the type and amount of physical activity that is appropriate or not, and who it is appropriate for. Individuals receive these messages through mass media, their family of origin, religious affiliation, or other pertinent sources and interpret the messages in important ways. One might receive the message that “boys play sports while girls play house,” or view television commercials that advertise sports equipment, or fitness programs that highlight what is lacking in the individual and what should change to be acceptable. The acceptance and interpretation of such events influence expectancy and the probability that one will be successful in the task of engaging in physical exercise.

Values and goals are determined by one’s personal and social environment. Cultural and community influences contribute to an individual’s personal and social environment, therefore, one’s goal to engage in regular physical exercise will be shaped by family, friends, work and social culture. Goals may also be affected by content (i.e., approach or avoidance) and intensity (temporal proximity and saliency). An individual may be inclined to approach the goal of engaging in regular physical activity if there is a belief that it contains a positive outcome, or may avoid this goal if the belief is that the outcome will be negative. For instance, a person considering the adoption of an exercise program may simultaneously have the thought that exercise will reduce depressive symptoms and improve physical appearance; while at the same time, have concerns that the exercise program will be overly challenging and require a sacrifice of leisure time activities. The approach and avoidance cognitions will compete with each other, and the stronger of the two will determine the goal orientation. Temporal proximity refers to a deadline that is applied to the goal behavior (e.g. such as when a fitness program has a ‘limited time offer’). Salience relates to how prominent or important the goal is, or similarly, how urgent is the desire to reduce depressive symptoms and feel better about physical appearance. The element of value in this model can be further broken down into ‘task value’ and the subtractive concept of ‘cost’. Components of task value include: intrinsic interest value (i.e., value indicating the pleasure that is inherent

in the performance of a task regardless of outcome), utility value (i.e., completion of a task will enhance likelihood of attaining a future goal), and attainment value (i.e., one's belief about the task and one's ability to perform it). Cost can be viewed as effort and/or lost opportunity. Value can therefore be quantified as it relates to the motivation to engage in regular physical exercise such that, an individual may enjoy hiking outdoors (i.e., intrinsic interest value); considers it to meet the exercise specifications that contribute to reduced depressive symptoms (i.e., utility value); the quality of performance during the exercise endeavor results in pride or distance goal (i.e., attainment value), combined with the subtractive elements of physical exertion and planning (i.e., effort) and reduced television viewing time (i.e., cost). This equation would look quite different from individual-to-individual based on their own unique background, environment, interpersonal supports, and internal strengths. The expectancy-value model provides value added insight into the motivational factors contributing to one's engagement in regular physical exercise. Expectancy-value theory provides a strong framework for thinking about how individuals make choices, redirects focus from rewards as the pervasive influence on choice, and makes intuitive sense. Limitations of this model include the difficulty with quantifying perceptions about performance, effort, and reward value; effort and performance may not be directly linked to rewards; and there is an assumption that reward is the only motivator for effort (Eccles, 1977).

Attribution Theory

Attribution theory of motivation is most commonly associated with the work of Bernard Weiner (1985). Weiner was interested in the cause of success and failure and how one's attributions (i.e., beliefs about the cause) affect emotion and cognition as well as motivation as a whole. First, it is important to understand the factors that affect the perception of success or failure: bias, personal history, social comparison, and the response of others. These perceptions lead to attributions characterized by locus of causation, controllability, and stability. When applied to motivation to engage in regular physical exercise these attributions provide a clear understanding regarding cause and effect in terms of motivation. For example, locus of causation addresses whether the

cause of choosing regular physical exercise originates within or outside of the self and affects (intrinsic self) or insulates (extrinsic self) the ego. Controllability is the perception of one's control in choosing exercise—does a person have influence over the outcome? Stability refers to whether the consequences will be the same across time, with the possibility of this being stable or unstable—not always the same across time. The way the elements in this model are applied will vary from individual to individual in order to arrive at a unique understanding of personal strengths and barriers to attaining personal physical exercise goals. The combination of factors that is most conducive to motivation to achieve (i.e., positive thoughts, feelings and ultimately motivation) are attributions that are intrinsic, controllable, and unstable. An example of this combination as it relates to engagement in regular physical exercise could be represented by the belief that, “I am the only one that can choose to apply myself to a regimen of physical exercise, I will improve with practice, my chance for success is 50/50, and my health and wellness can change depending on the level of effort I put into this endeavor.” Weiner's attribution theory (1985) provides a solid foundation for understanding motivation and creating a situation with the most likelihood for success, and can be applied to various concepts and settings. Limitations of this theory include inaccurate attributions can cause misconceptions, and many research studies are based on hypothetical events that participants have to make assumptions about.

In conclusion, the complexity of variables that compose motivation to engage in regular physical exercise for overall wellness can at first appear quite overwhelming; however, the broader view of the expectancy-value and attribution models are sufficient to explain essential factors of the psychological process of motivation, and can be utilized as a framework for influencing motivation in a manner that supports engagement in regular physical exercise for overall wellness.

Conceptual Change About Physical Exercise as it Relates to Motivation to Engage in Regular Physical Exercise For Overall Wellness: Research Findings

A framework regarding conceptual change about physical exercise as it relates to motivation to engage in regular physical exercise for overall wellness is beginning to emerge; however, significant complexity exists between motivation and conceptual

change as it relates to the concept of regular physical exercise. A brief review of current research findings is provided to increase awareness and ignite interest for further exploration.

- There is a strong relationship between intention to engage in healthier diet and exercise behaviors when appearance is at risk (Stellefson et al., 2006).
- Mental imagery interventions are an effective means for influencing exercise-related cognitions (Duncan et al, 2011).
- Basic exercise education may influence health beliefs and benefit beliefs are strongly and positively associated with intention to exercise (Gill & Sullivan, 2011).
- Exercise habits of close others are associated with one's own exercise habits (depending on perceived support) (Darlow & Xu, 2011).
- Sport and physical activity involvement at any point in the life cycle almost invariably occurs within a social milieu. Effects of group involvement upon the individual will be influenced by his or her status within the group. Researchers found that training and instruction, social support, and positive feedback were the coaching behaviors most strongly associated with athlete satisfaction (Brustad & Babkes, 2004).
- Stable intention to engage in physical activity and perceived behavioral control are the key predictors of changes in physical activity (Godin et al, 2010).
- Exercise for charitable causes can be motivating. Motivators can be divided into primary (i.e., connection with the cause, improved fitness & mutual training support) and secondary (i.e., mutual support, personal growth, fundraising, family/friend response) components (Jeffery, 2012).
- Psychotherapists that exercise themselves are more likely to raise the issue with their patients (McEntee & Halgin, 1996).
- Pedometer-aided, self-monitoring and brief e-counseling increased physical activity (VanWormer, 2004).
- Aerobic exercise can be successfully used as an adjunct therapy for substance abuse (Brown et al., 2010).

- Reframing exercise time commitment increased willingness to initiate physical exercise program (Peetz, 2011).

The information provided in this paper is meant to provide awareness, encourage research, and most importantly to initiate conversations about engaging in regular physical exercise between patients and their therapists. In addition, psychologist and all skilled helpers are urged to assess for level physical activity engagement, identify maladaptive manners of thinking, feeling, and behaving related to physical activity, and engage in deliberate discussions that might promote the attainment of appropriate physical activity goals within themselves and their patients.

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